

Ideal-ist Success Story

Ideal-ist – your Worldwide ICT Support Network



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Success Story

FREEDOM, Spain



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About Ideal-ist

Ideal-ist is the first and unique quality labelled international ICT partner search network with 13 years experience. The network of Ideal-ist consists of 63 national contact points (NCP) in the area of Information and Communications Technologies. The Consortium members are from EU and Non-EU Countries, including Associated States, Eastern European Partner Countries (EEPC) and Mediterranean Partner Countries (MPC) and Emerging countries like China, Brazil, India and South Africa. Ideal-ist is part funded by the European Commission and supports research organisations and companies worldwide

- to find partners for their project ideas.
- to join projects and
- to find services leading them to success in the 7th Framework programme.

Furthermore, the main goal is the enhancement of cooperation between the national NCPs within FP7 and an overall improvement of quality across Europe in the dynamically growing area of ICT.

This is in line with the international cooperation strategy of the European Commission.

How Did Ideal-ist Help?

The Ideal-ist service has been very useful in a twofold way: on one hand it helped in the recruitment of partners with a well-defined expertise, on the other hand the brainstorming among the organisation involved in the expression of interest helped in the refinement of the objectives and paths of investigation to be followed.

The proposal received more than 30 expression of interest.

The consortium includes 8 partners from 5 different Countries (one from Indonesia).

Project Details

FREEDOM – Femtocell-based netwoRk Enhancement by intErference management and coordInation of infOrmation for seaMless connectivity

Country: Spain

Submitted in Call4, Objective ICT-2009.1.1: The Network of the Future



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What Is the Project About?

In the recent years there has been an increasing demand for mobile traffic due to the large nomadic population and the type of applications to be employed. This has motivated that the near-future 4G networks must enhance their efficiency in terms of spectrum, energy and cost. The solution addressed in this project is the use of femtocells and it is also considered by several mobile operators and different standards, such as IEEE 802.16m and LTE-Advanced.

In a nutshell, the femtocells are deployed in the households to get better indoor voice and data coverage, improving at the same time the macrocell reliability and promise to be a cost-effective solution, able to improve the spectrum efficiency of the network and additionally, increase the peak-bit rate in low coverage areas. There are many technical studies and business models elucidating the outstanding potential of femtocells in terms of increasing the network capacity, saving energy and providing benefits from the social and economic side, indicating the femto-based networks as a substantial technological breakthrough on future mobile networks. The ever-increasing industrial interest on femtocells is also testified by the boost in patents filed in 2008-09.

However, macrocells and femtocells (connected through an IP-based backhaul link) use the same spectrum, originating interference and imposing additional horizontal handover issues that need to be administrated. In addition, the industries are concerned because all the envisaged benefits are not straightforward to achieve, due to following major technical and non-technical challenges:

Technical

- A massive deployment of femtocells will pose serious issues on the radio interference management between the macro and femto layers and among neighbouring Femto Access Points (FAPs).
- There is still no clear effective approach for insuring seamless BS-FAP and FAP-FAP handover.
- Lack of precise engineering solutions for scalability, redundancy and traffic partitioning: the more massive is the deployment, the more impacting are these aspects.
- Access control: the mechanisms proposed so far are not optimised and are difficult (if not impossible) to handle when the areas assigned to different FAPs overlap (massive deployments).
- There is currently no guarantee that the fixed broadband connection will prioritize the traffic originating from the FAPs for a service without interruptions, call blocking and dropping.



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Non-technical

- The major advantages seem concentrated on the operator side and there is no precise plan (services and tariff plans?) to make the purchase of a FAP attractive for the end-user. There is still no guarantee that all the mobile services offered by the Wireless Network Operators (WNO) can be offered to the femto end-user.
- WNO prefer not to be tied to a single vendor and current FAP equipment is not likely to interoperate.
- A new type of handset could be required to efficiently operate with FAPs and handset issues may jeopardise the business case.

This project aims at providing seamless solutions and high bit rate wireless services, based on Femtocellbased network Enhancement by interference management and coordination of information for seamless connectivity (FREEDOM). The planned activities target at providing a new vision of a femto-based network, giving solutions to the major concerns about the foreseen mid-term (2011-2012) massive deployment of FAPs by focussing on the following items

- a) devise advanced interference-aware PHY techniques as a function of the quality of the backhaul link;
- b) improve control plane procedures for seamless and scalable connectivity in the presence of a massive femtocells deployment;
- c) evaluate the benefits of the femto-based networks at system-level.

The outputs of those tasks will allow FREEDOM to develop a business case for the femto-based network relying on the proposed architectures. Moreover, the actual impact of FREEDOM will be based on providing inputs to standardization bodies and relevant forums, disseminating the project vision and its achievements, generating IPR and conceiving architectures for the selected algorithms/protocols on a hardware platform.



Detailed Information on the Project

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